

Northeast Regional Association of Coastal Ocean Observing Systems

Progress Report

University of Southern Maine

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For the Period January 1, 2007 to June 30, 2007

Project Summary *(no more than 1 page)*

The goal of this project is to establish the Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS) in a manner consistent with all certification requirements of the U.S. IOOS.

Objectives leading to this goal include:

1. Respond to and, in the governance of the Regional Association (RA), provide a voice to users;
2. Secure the participation of the producers and providers of data and data products through the existing distributed regional system of ocean observing and predictions;
3. Develop synergies between the national backbone of the RCOOS and the regional enhancements, with strong connections to the Mid-Atlantic region;
4. Assure that the “conveyor belt” is in place, by which research in ocean observing technologies and modeling feed ocean observing operations, and operations, in turn, inform the need for research; and
5. Build on recent breakthroughs in dynamic data sharing, both technically and institutionally, and involving oceanographic, biologic, and geologic providers, to create an effective, standards-based data management and communications subsystem.

The approach to establishing a Northeastern Regional Association involves the following eight steps over 36 months:

1. Organize and convene an Advisory Committee of data users and producers;
2. Achieve a heightened understanding of users’ needs;
3. Quantify the most important gaps in the system to be filled to meet these needs;
4. Establish the principles by which the ocean data generators, modelers, and users will transform the collection of existing observing system into a network of systems (the “regional coastal ocean observing system” or RCOOS) envisioned for an IOOS;
5. Through the nascent Gulf of Maine Ocean Data Partnership, advance the integration of ocean observation data to the point of reliable implementation, and the Partnership itself to a level of institutional stability;
6. Design the governance and legal structure of a Regional Association that meets the standards of the IOOS, according to the principles established under (4);
7. Prepare a business plan for the Regional Association and RCOOS; and
8. Launch and begin the operations of the Regional Association in 2007.

Changes in Membership and Committees

In the past six months, the RA has added members to the Advisory Committee in order to be more strategically and geographically representative. In January, stakeholders from Connecticut expressed interest in joining the Northeast region. The working assumption had been that the Northeast region extended roughly to Block Island Sound off Rhode Island. Based on Connecticut's interest, the PI team agreed to include the rest of southern New England to Long Island Sound as part of the region (which overlaps the Mid-Atlantic Region). To help represent that area, Jim Edson with the University of Connecticut was added to the Advisory Committee. John Muench with the Naval Undersea Warfare Center in Rhode Island and Avijit Gangopadhyay of UMass-Dartmouth also joined the Advisory Committee.

In May, the PI Team established an Executive Committee that is made up of the PI Team and select members of the Advisory Committee. The purpose of this executive committee is to be a representative and balanced group that will make the decisions for the nascent regional association, such as what the governing structure should be, until a formal board is in place. Following are the members of the Executive Committee (* indicates a PI):

- Art Allen, Regional Federal Agencies
- Philip Bogden*, GoMOOS
- Janet Campbell*, University of New Hampshire
- Paul Currier, Ocean Data Partnership
- Ted Diers, New England CZM Programs
- Jim Edson, University of Connecticut
- Avijit Gangopadhyay, UMass-Dartmouth
- Al Hanson, University of Rhode Island
- David Mountain*, Northeast Fisheries Science Center
- Neal Pettigrew*, University of Maine
- Evan Richert*, University of Southern Maine
- Peter Smith, Regional Association for Research on the Gulf of Maine
- John Trowbridge*, Woods Hole Oceanographic Institute

Stakeholder Engagement and Communications

Since the last progress report four meetings of the Advisory Committee have been held in January 2007 and April 2007. The meetings have been held in New Hampshire and Rhode Island. Additionally, the PI Team has met in person following each of the Advisory Committee sessions, and again by phone January 3, February 7, and May 18. The PI Team and four members of the Advisory Committee (Paul Currier, Ted Diers, Jim Edson, and Al Hanson) also met in person May 31 in Portland, Maine, to advance discussions around permanent governance of the Regional Association. The first meeting of the newly formed Executive Committee has been scheduled for July 12, 2007 and the next Advisory Committee meeting will be August 1, 2007.

In preparation for Advisory Committee meetings, members were interviewed by phone to discuss issues such as why they are involved in developing the RA, the role they believe the RA should play in the region, what they think the most appropriate governing structure should be, whether they believe there should be recognized sub regions, and how to deal with conflicts of interest. The interviews in advance of April 27 were summarized and shared with the full committee to help guide the discussion about NERACOOS governance.

Several e-mail updates have been sent to the Advisory Committee, PI Team, and additional interested parties since the beginning of January (nine total), and the web site, www.neracoos.org has been constantly updated with new membership information and meeting details, including notes, presentations, agendas, user needs analyses, and so on.

Tom Shyka attended the National Federation of Regional Associations Meeting in Washington, DC March 8 and 9. Additionally, Tom Shyka and Evan Richert participated in a meeting of the Northeastern Region Oceans Council May 24, where they distributed a double-sided information sheet on NERACOOS to the participants.

Planning and Implementation – Governance

Much of the work of the Advisory Committee during year 2 has focused on developing a governing system for the new RA. Based on input from last year to present, the Advisory Committee favors a governing board that is representative of both data providers and data users from throughout the region; doesn't favor formally recognizing sub regions, at least not initially; prefers a legal non-profit entity over a loose MOU structure; and believes that the board should engage advisory teams to guide setting regional priorities in ocean observing.

The details of this governing structure have been articulated on paper and reviewed by the Executive Committee. The initial structure of by-laws reflecting this organizational model, reflecting guidance on several major components, has been drafted (see attached), and a nominations process has been outlined. All of these details will be presented to the Advisory Committee and discussed August 1.

In the midst of facilitating this Advisory Committee process, a consortium of research institutions has come forward with an alternate governance model. The PI Team agreed to be open to the discussion to allow this model to be developed, presented, and discussed. While, as of June 30, 2007, no detail of this model has been seen as yet (thus can not be described in this report), the plan is for the Executive Committee to discuss it July 12 and then share it with the Advisory Committee for discussion August 1. Ultimately, the decision regarding which governance model NERACOOS adopts will be left to the Executive Committee, with valued input by the Advisory Committee.

Defining the Regional Observing System Priorities

Priorities and prototype products: Earlier work with the Advisory Committee led to

four broad priority areas for the development of prototype products: water quality, inundation, living marine resources, and harmful algal blooms.

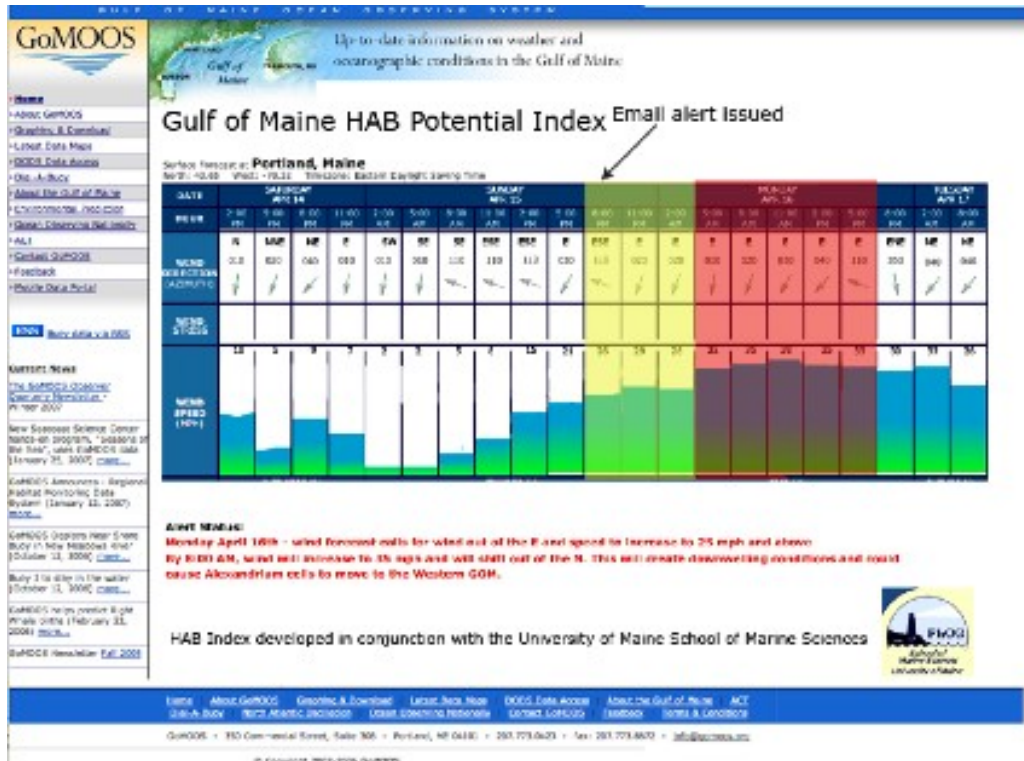
The project has also completed a user needs assessment that included synthesizing input from hundreds of individuals from multiple sources, as well as a second on-line survey of users of GoMOOS's web site to get a more comprehensive picture of how end users are utilizing ocean observing data. From the synthesized user needs, GoMOOS staff developed a list of potential web products that could be developed to meet these needs. With this information in hand, staff met with expert researchers in the region, including both co-investigators on the RA grant and others, to gain a better understanding of the scientific research requirements that would be necessary to develop these products. Based on end user prioritization, technical development requirements and the present ability to meet those needs from a scientific perspective, all potential products have been organized into low-to-high feasibility status (http://www.neracoos.org/documents/user-needs/PD_Func_Req/). In addition to clearly displaying potential products and their feasibility, this work has simultaneously identified gaps in the region's ability to meet end user needs.

The project PIs and staff have also begun to prototype high feasibility products that surfaced from the user needs assessment. At the April 27 Advisory Committee meeting, staff presented a working prototype that uses wave forecasts and water level models to predict not just storm surge, but likelihood of coastal flooding and erosion during periods of heavy waves up to 48 hours into the future. This ability is particularly interesting to emergency response managers, the National Weather Service, and coastal zone managers to aid in their ability to warn residents or model future events.

Additionally, research co-PIs and staff developed a prototype for a Harmful Algal Bloom prediction and warning system using wind forecast data and real time buoy observations. Researchers have discovered a known relationship between wind speed, wind stress and direction that can produce conditions favorable to HAB development. The forecast would run continuously, and using an email alert system, would notify registered users when the conditions are favorable for a HAB are predicted to occur. Once alerted, managers would visit a password-protected on-line information center with additional information on the conditions. See the two images on the following page, moving from storyboard to index concept.

In addition, the project has entered into an agreement with Applied Science Associates to assist with a prototype product relating to the coupling of circulation models requested as a high priority by the region's water quality managers. We anticipate this prototype to be available for review, comment, and revision during the next quarter.

When NCEP wind forecast and GoMOOS buoy data show conditions favorable to the formation of HABs, an alert is issued via email or SMS text message. User logs in to SSL secure website and views the current HAB Potential Index and forecast.



5

observing system design and data management and product development needs. This proposal has been recommended for funding for the first year at \$1.2 million. The grant is scheduled to run for three years.

Gulf of Maine Ocean Data Partnership: Through the RA planning grant, GoMOOS continues to support the work of the Gulf of Maine Ocean Data Partnership (GoMODP), staffing their meetings and communications, and preparing for the web services workshop in the fall of 2007. The GoMODP added a new member, the University of Massachusetts at Boston and its Center for Coastal Environmental Sensing Networks (CESN).

The GoMODP has developed a technical expertise catalog to support the partners as they work to advance data integration and interoperability. Recognizing that no one organization will have the domain knowledge or technical knowledge needed for data interoperability, the partnership has developed a technical expertise catalog. This catalog will help identify which partners have expertise in various aspects of data management and communications including database design and management, metadata development, programming, website development etc. This catalog will be a valuable community resource allowing partners to call on regional expertise to help advance regional data interoperability.

The GoMODP Technical Committee has conducted a data accessibility review for many of the partners' datasets. This review will allow the partnership to take stock of where the partners stand in terms of making data accessible and will allow the partnership to identify areas where partners need assistance in advancing data accessibility.

The GoMODP has formed a metadata review committee who will be reviewing parent metadata records and providing guidance on how to improve metadata records.

The GoMODP is planning a fall technical workshop with a focus on web services and a related interoperability experiment to investigate interoperability among the OBIS (Ocean Biogeographic Information System), NEIEN (National Environmental Information Exchange Network), and developing OGC (Open Geospatial Consortium) data sharing frameworks.

Major Goals for Year 3

Goal 1: Support the Advisory Committee and Executive Committee

Goal 2: Complete the governing structure for NERACOOS

Goal 3: Establish a Board of Directors for NERACOOS

Goal 4: Complete a business plan for NERACOOS

Goal 5: Engage the NERACOOS board in dedicated strategic planning to outline the decision-making process and staffing strategy for the new association.

Support the Advisory Committee and Executive Committee

The Executive Committee is scheduled to meet July 12 in Woods Hole, and Advisory Committee meetings are scheduled for August 1 and November 7. The Executive Committee will likely meet between August 1 and November 7 as well to advance the guidance of the Advisory Committee. Support for these committees includes setting meeting agendas, planning logistics, reporting decisions, and facilitating the work of the committees (such as conducting an open nominations process for the new board).

Complete the Governing Structure for NERACOOS

A great deal of work has already gone into the development of an open, fair, and transparent governing and decision-making structure. This will certainly continue to be a focus over the second half of 2007. Integral in this goal is balancing the needs of a diverse set of stakeholders to develop a lasting structure that engenders productivity and trust.

Establish a Board of Directors for NERACOOS

Once a governing structure has been settled on, we will begin the work of establishing the initial board of directors for the association. The process for selecting the board will depend on the governing model established. It could be driven by consortia (e.g., a consortium of academic institutions appointing its representatives), or through an open nominations process. The Executive Committee will select nominees to fill already-identified categories for the board. This initial board list would then be reviewed by the Advisory Committee at the November 7 meeting. Once the board has been selected, the Advisory and Executive Committees will dissolve.

Complete a Business Plan for NERACOOS

During the last year, a business plan has begun to take shape as we have considered the potential funding sources for different functions of the NERACOOS, including grants and contracts for DMAC functions, and leveraged external grants to match IOOS program funds for observing and modeling functions. We have continued to have discussions around sustainability of the systems that will comprise the Regional Association, geographic coverage, the model of a “distributed lab” that emphasizes integration of existing, ongoing data sets with sustained funding behind them, and diversification of system revenues. These and other topics will be more formally addressed in the development of the business plan this coming year.

Engage the NERACOOS Board in Dedicated Strategic Planning

In the first part of 2008, the Executive Committee and staff will assist the new board in the work of incorporating the association, and in deciding the necessary staffing and decision-making strategies. The Advisory Committee has indicated its discomfort in making decisions about how the association will operate and how it will be staffed, preferring instead to defer those decisions to the governing board.

In addition to these goals, we continue to want to increase our understanding of the gap between major ocean observing and forecasting products sought by users and decision makers and the current capacity of the ocean observing and prediction system in the northeast. This understanding will help to determine the priorities for maintaining and

adding to the existing capacity. It likely will emerge incrementally—in part during the course of year 3 as a result of completing prototype products and determining what is needed to sustain them; in part as a result of the work of RCOOS scientists under terms of the FY 2007 NOAA RCOOS grant (for example, these include Observing System Simulation Experiments); and in part as a result of development of a more complete Science Plan during the next RA planning phase.

Budget Analysis

Through April 2007, 84% of the first and second year grant funds were expended or encumbered. To the degree that encumbered funds (particularly through USM's contract with GoMOOS) as well as unencumbered funds were under spent through April 2007, the largest reason is that the first-year grant became available five months later than the theoretical start date (September 2005 rather than April 2005). Thus, the work has been underway (through April 2007) only for 19 months rather than 24 months; staffing and other expenses have paralleled this time period.

That said, our analysis of the budget suggests that we will have the opportunity to re-program approximately \$100,000 of funds. This is primarily due to under spending in two line items: travel and facilitation consultant. Travel costs have been significantly less than originally projected; facilitation consultant costs (for facilitating Advisory Committee meetings) are less because the Maine Sea Grant Program volunteered this service and has been carrying out effectively. In the near future, we intend to discuss with NOAA the strategic re-programming of these funds on behalf of the Regional Association.

RCOOS Budget(s)

Apart from the RA Planning Grant budget, and not a part of the work being conducted under the grant but important to it, it must be noted that the existing RCOOS in the northeast is facing serious funding challenges. While the recent RCOOS award helps, it is likely that over the next 6 to 12 months, some RCOOS assets will start to be pulled from the water for lack of funding. The extent of the pull back will depend on, among other things, the ability of alternative sources of funding to fill in the gaps and on the actual size of the second year of the recent RCOOS grant.